

item group-to-supplier mapping may identify the suppliers that sell a group of items, where the group includes the desired item. Fulfillment server 16 may then communicate a component ATP request 32 to the LFMs 22 and/or ATP servers 14 associated with the identified suppliers.

5 Fulfillment server 16 may attempt to define alternate or substitution preferences for ATP request 30. Fulfillment server 16 may include alternate product information in component ATP requests 32. Since the user may have selectively overridden profiled default constraints, fulfillment server 16 first evaluates request line-item and request line-item delivery details, then checks ATP request 30 to
10 determine whether alternates or substitutions are allowed. If not allowed, then the primary relationship specified in ATP request 30 is honored. If alternate or substitute products are allowed, then user, customer, or other suitable alternate or substitution preferences take precedence. If no such preferences are specified, fulfillment server 16 may check for any supplier default preferences. If no specified preferences exist
15 for the supplier either, component ATP requests 32 may be marked as "unspecified" relative to alternates and substitutions. In this case, LFMs 22 may respond to component ATP requests 32 with multiple product options.

Fulfillment server 16 generates the component ATP requests 32 with embedded business constraints. Since the user may have interactively overridden
20 profiled default constraints, fulfillment server 16 uses request line-item and request line-item delivery details for defining attributes of component ATP request 32. In one embodiment, the following constraints are defined, in any suitable combination and without limitation: *request quantity, ship complete, partial/ cancel, ship on-time, alternates/substitutes allowed, preferred alternates/substitutes, lot size/multiples, and*
25 *consume forward/ backward boundaries*. Fulfillment server 16 may also indicate that component ATP request 32 is to be further constrained in some manner according to profiled business constraints. Once component ATP requests 32 have been generated, fulfillment server 16 sends the component ATP requests 32 to one or more LFMs 22 for servicing using network 20. Fulfillment server 16 may also update the
30 status of ATP request 30 and possibly component ATP requests 32 to "pending quotation."

In one embodiment, fulfillment server 16 computes or otherwise generates a sequence of component ATP requests 32 that it sends to a particular LFM 22 associated with a first component ATP request 32 in the sequence. The target LFM 22 accepts the sequence, processes the component ATP request 32 specifically targeted to it, and then passes resulting component quotations or component promises, along with remaining component ATP requests 32 in the sequence, to LFM 22 targeted by the next component ATP request 32. In turn, that LFM 22 accepts the sequence, processes the component ATP requests 32 specifically targeted to it, and passes resulting component quotations or component promises, along with any remaining component ATP requests 32 in the sequence, to the LFM 22 targeted by the next component ATP request 32. Each such LFM 22 may compute its component quotations or component promises such that they satisfy all suitable business constraints relative to component quotations or component promises made by other LFMs 22 earlier in the sequence. Fulfillment server 16 receives the sequence of resultant component quotations or component promises from the last such LFM 22 and generates a combined quotation or promise corresponding to the ATP request 20 from client 12.

Component ATP Request Attributes

In one embodiment, component ATP request 32 is an object having some or all attributes of the request line-item and request line-item delivery objects. Fulfillment server 16 embeds business constraints into the component request that are relevant to functions of LFMs 22. The component request may have the following attributes or may otherwise support the following information, in any suitable combination and without limitation: (1) *component request ID* - assigned at fulfillment server 16 when it creates component request; (2) *LFM/ATP Server ID* - target LFM 22 and/or ATP server 14 for component request, which may remain unspecified where sourcing relationship is not specified or derived at fulfillment server 16 and in which case any LFM 22 and/or ATP server 14 is free to respond to the component request if it can meet requirements; (3) *fulfillment server ID* - network address or other identifier for fulfillment server 16, useful in environment having multiple fulfillment servers 16; (4) *sales channel (seller)* for component request; (5) *request rank* for parent request; (6) *request line-item ID* - links component request to

request line-item; (7) *request line-item delivery ID*; (8) *product ID* - may correspond to *product ID* known to one or more target LFMs 22 and/or ATP servers 14; (9) *product UOM* - may correspond to *product UOM* used at one or more target LFMs 22 and/or ATP servers 14; (10) *request quantity*; (11) *request date*; (12) *category/attributes*; (13) *ship complete*; (14) *partial/cancel*; (15) *ship on-time*; (16) *lot size/multiples*; (17) *alternates/substitutes allowed*; (18) *preferred alternates/substitutes*; and (19) *consume forward/backward boundaries* - defines delivery window the customer is willing to accept, which may control how far forward or backward from the request date ATP servers 14 will search for available quantities.

- 10 In addition, the component request object may support a request status field that fulfillment server 16 updates at certain milestones in the life cycle of the component request, including but not limited to: (1) "pending quotation" - component request has been submitted for initial quotation or re-quoted, but resulting quotation not processed; (2) "failed quotation" - fulfillment server 16 determined component
- 15 quotation failed to meet requirements for the component request; (3) "pending quotation confirmation" - fulfillment server 16 has processed quotation and transmitted it to client 12, which has yet to respond; (4) "confirmation not received" - confirmation not received from client 12 by date and time specified in *accept-by* attribute, such that the quotation is essentially null and void; (5) "rejected" -
- 20 fulfillment server 16 has processed rejection and sent it to LFMs 22 and/or ATP servers 14; (6) "pending promise" - fulfillment server 16 has processed the quotation confirmation, sent it to the LFMs 22 and/or ATP servers 14 as component confirmations, and is monitoring promise responses; (7) "promised" - fulfillment server 16 received requisite component promises and sent the resulting promise to
- 25 client 12; (8) "failed promise" - fulfillment server 16 has not received requisite component promises and has sent resulting failure notification to client 12; (9) "pending cancellation" - fulfillment server 16 processed a cancellation, sent it to LFMs 22 and/or ATP servers 14, and is monitoring confirmation responses; and (10) "canceled" - fulfillment server 16 received component cancellation confirmations
- 30 from LFMs 22 and/or ATP servers 14 and sent cancellation confirmation to client 12.